

PLATE XXIV.

- Fig. 1. A small portion of the rigid skeleton of *Farrea occa*, exhibiting its angulated structure and central canals in the fibres, on which are dispersed numerous small attenuato-stellate retentive spicula, $\times 108$ linear.
- Figs. 2, 3, & 4. Three of the small attenuato-stellate retentive spicula from *F. occa*, showing some of their numerous variations in form, size, and the number of their radii, figs. 2 & 3 $\times 400$, & fig. 4 $\times 666$ linear.
- Fig. 5. A spiculated biternate interstitial spiculum from *F. occa*, $\times 45$ linear.
- Fig. 6. A furcated spiculated biternate interstitial spiculum from *F. occa*, $\times 65$ linear.
- Fig. 7. A portion of the harrow-shaped quadrilateral siliceo-fibrous dermal structure of *F. occa* oppositely armed at its angles, $\times 50$ linear.
- Fig. 8. A fragment of the siliceo-fibrous skeleton of *Alcyoncellum speciosum*.
- Fig. 9. A slender attenuated rectangulated hexradiate interstitial spiculum with nearly equal radii from *A. speciosum*, $\times 175$ linear.
- Fig. 10. A slender attenuated rectangulated hexradiate interstitial spiculum with elongated basal shaft from *A. speciosum*, $\times 108$ linear.
- Fig. 11. A very fine specimen of floriform-hexradiate stellate retentive spiculum from *A. speciosum*, $\times 666$ linear.

PLATE XXV.

- Fig. 1. A portion of a section of the rigid skeleton of *Myliusia Grayii*, at right angles to the surface, exhibiting the crypt-like arrangement of the skeleton, $\times 108$ linear.
- Fig. 2. A section at right angles to the surface of the skeleton of *Kaliopsis cidaris*, from the surface to the basal prehensile organs, exhibiting the change of the structure from the basal canaliculated fibres to the imperforate and ramifying ones of the superior mass of the skeleton, $\times 183$ linear.
- Fig. 3. A portion of the minute ramifications of the fibrous structure of the surface of the rigid skeleton of *K. cidaris*, $\times 308$ linear.
- Fig. 4. Three of the foliate-peltate connecting spicula of the expansile dermal system of *K. cidaris*, one of them (*a*) having upon it a group of minute incipiently spinous fusiformi-cylindrical spicula, $\times 175$ linear.
- Fig. 5. Two of the minute incipiently spinous fusiformi-cylindrical spicula of the dermal membrane of *K. cidaris*, $\times 666$ linear.
- Fig. 6. A portion of the rigid skeleton of *Purisiphonia Clarkei*, exhibiting the irregular mode of disposition of the canaliculated siliceo-fibrous structure, and one of the rectangulated hexradiate interstitial spicula *in situ*, opposite (*a*), $\times 108$ linear.
- Fig. 7. An imperfect rectangulated hexradiate interstitial spiculum from *P. Clarkei*, $\times 175$ linear.

7. On the Genus *Alcyone*.

By R. B. SHARPE.

I propose to give short synopses of some of the more obscure genera of the family *Alcedinidæ*, in order that the various species, before appearing in my 'Monograph,' may be brought under the notice of ornithologists, and thus my arrangements and synonymy may be fairly exposed to criticism. It is my wish to make the Monograph of the Kingfishers as complete as possible; and I therefore invite the criticisms of all my friends, in order that I may be able to take advantage of them in my larger work.

Having already (P. Z. S. 1868, p. 587) treated of the genus *Ceyx*, I propose in the present paper to discuss the genus *Alcyone*, which has only three toes, and is otherwise closely allied to *Ceyx*. The genus *Alcyone* was founded in 1837 by Swainson (Classif. of Birds, ii. p. 336), and at present contains seven species.

The two most distinct and clearly characterized are *Alcyone pusilla* and *A. cyanopectus*; but the other five are very closely allied and hard to distinguish. I believe that the following synoptic table will materially assist in their identification:—

A. Torque pectorali lazulino	1. <i>A. cyanopectus</i> .
B. Torque pectorali nullo.	
a. Abdomine rufo.	
a'. Rostro robustiore.	
a''. Supra saturate ultramarina.....	2. <i>A. lessoni</i> .
b''. Supra lætissime ultramarina	3. <i>A. affinis</i> .
b'. Rostro tenuiore.	
a''. Rostro brevior: pileo nigro indistincto fasciato	4. <i>A. diemensis</i> .
b''. Rostro longior: pileo laud fasciato.	
a'''. Hypochondriis rufis	5. <i>A. azurea</i> .
b'''. Hypochondriis pulcherrime ul- tramarinis	6. <i>A. pulchra</i> .
b. Abdomine albo	7. <i>A. pusilla</i> .

The first on the above list, *Alcyone cyanopectus*, serves to connect the genus *Alcyone* with *Ceyx*, as it is very closely allied to *Ceyx philippinensis*, Gould; and, on the other hand, another link is discovered in *Alcyone pusilla* and *Ceyx solitaria*, both of which species are closely allied. The principal difference between the genera *Ceyx* and *Alcyone* is in their habits. Whereas the *Ceyces* are almost entirely insectivorous, the members of the genus *Alcyone* feed almost entirely on fish. The geographical distribution of each genus is also in favour of their direct affinity. *Ceyx* is an Indian genus strictly speaking, extending all over the Indian peninsula and Malayasia, being also distributed over the Malay archipelago, where, however, a different form of the genus (with bright blue back) is met with. On the other hand, *Alcyone* is essentially a typical Australasian genus, being widely distributed over the whole Australian continent, and thence extending northwards, through the Austro-Malayan subregion, to the Philippines. In these islands the aberrant species *Alcyone cyanopectus* occurs; and in every respect as regards plumage this species is a true *Ceyx*. In form of bill, however, it is an *Alcyone*—although, but for the distinct pectoral band and blue flanks, it might be mistaken for *Ceyx philippinensis*. My friend Dr. Salvadori has written to me, calling in question the propriety of my placing this latter bird in the genus *Ceyx*; but in my opinion the species really belongs here. *Alcyone cyanopectus* should probably also be included in the genus *Ceyx* as an aberrant species forming the point of union between the two genera, and I should not be at all surprised to find this view adopted by some future systematist. But no satisfactory conclusion can be obtained until we know more of the habits and geographical distribution of these two

Philippine species. The arrangement proposed above, viz. of uniting *Alcyone cyanopectus* to *Ceyx philippinensis* under one and the same genus, would be more natural, as we should then have all the three-toed Kingfishers with bright backs under the genus *Ceyx*; and all those having the upperside uniform under *Alcyone*. No one who saw the specimens from which I described and figured the species in my 'Monograph' would doubt for an instant that I had placed them in the proper genera, from a study of their external form.

The following I believe to be the correct synonymy of the various species of *Alcyone*, specimens of all of which are at present before me:—

1. *ALCYONE CYANOPECTUS*. Blue-girt Kingfisher.

Ceyx cyanopectus, Lafr. Rev. Zool. 1840, p. 33; Gray, Gen. of Birds, App. p. 5 (1848).

Alcyone cyanopectus, Jard. Contr. to Orn. 1850, p. 82; Sharpe, Monogr. *Alced.* pt. 4 (1869).

Alcyone cyanipectus, Bonap. Consp. Gen. Av. i. p. 158 (1850); Reich. Handb. *Alced.* p. 7, t. 396. f. 3060 (1851); Bonap. Consp. Vol. Anis. p. 10 (1854); Hartl. Journ. f. Orn. 1854, p. lxiv.

Alcedo cyanipectus, Schleg. Mus. Pays-Bas, *Alced.* p. 18 (1863).

Alcyone cincta, Jard. Contr. to Orn. 1850 (plate only).

A. torque pectorali lazulino lato: mandibula nigricante, maxilla aurantiaca.

Hab. in insulis Philippinis.

Head deep bluish black, irregularly banded with bright blue, more thickly on the nape; the whole of the back rich shining cobalt; scapularies and wing-coverts black, broadly washed with dark blue, the latter also spotted with bright cobalt; wing-feathers brownish black, the secondaries narrowly edged with indigo; tail black, washed with indigo; cheek indigo, spotted with cobalt; a spot in front of the eye, a patch of feathers at the side of the neck, throat and upper part of the breast, whitish tinged with pale sienna; a band across the upper part of the breast and the flanks deep indigo, tinged with brighter blue on the latter; abdomen and under wing-coverts rufous; bill brownish black, the lower mandible tinged with orange. Total length 5 inches, of bill from the front 1·4, from gape 1·7, wing 2·5, tail 0·7, tarsus 0·3, middle toe 0·3, hind toe 0·2.

Hab. Philippine Islands (*Mus. T. C. Eyton*).

The description and measurements are from Mr. Eyton's specimen, the same described by Sir William Jardine and kindly lent me by Mr. Eyton.

2. *ALCYONE LESSONI*. Lesson's Kingfisher.

Alcyone lessonii, Cass. Proc. Phil. Acad. 1850, p. 69; *id.* Cat. Halc. Phil. Mus. p. 5 (1852); Selater, Journ. Proc. Linn. Soc. 1858, p. 156.

Alcyone azurea, var. *lessonii*, Gray, P. Z. S. 1859, p. 155; *id.* P. Z. S. 1861, p. 433.

Ceyx azurea, Less. Voy. Coq. Zool. i. p. 690 (1826).

Alcyone azurea, Rosenb. Journ. f. Orn. 1864, p. 118.

A. torque pectorali nullo: abdomine rufo: rostro robustiore: supra saturate ultramarina.

Hab. in Nova Guinea et in insulis dictis "Aru."

Above deep rich ultramarine; wing-coverts deep blue-black edged with ultramarine; quills blackish, the inner web very light rufous from the base, the secondaries broadly edged with rich ultramarine; tail deep ultramarine above, black beneath; a minute loral spot rufous; a longitudinal patch of feathers along the sides of the neck white tinged with pale orange; throat whitish tinged with pale rufous; cheeks, sides of the neck, and a large patch of feathers on the sides of the upper part of the breast deep rich ultramarine extending a little on to the flanks; rest of the under surface of the body deep rufous, with a rich lilac shine upon the flanks; bill jet-black; feet red. Total length 7 inches, of bill from front 1·7, from gape 2·1, wing 2·85, tail 1·2, tarsus 0·3, middle toe 0·5, hind toe 0·25.

The above description is taken from a very beautiful male procured in the Aru Islands, and kindly lent to me by Mr. Wallace. Another male specimen from New Guinea, collected by Mr. Wallace, for the loan of which I am indebted to the Viscount Walden, is apparently a younger bird, and differs in having the tips of both mandibles ivory-white, and the whole under surface paler, especially on the throat, which is nearly pure white. To this specimen Mr. Wallace has attached a MS. note on the spot, as follows:—"feet vermillion; bill black, tipped with white; eyes dark brown; length 6·6 inches." The measurements of this bird agree exactly with the Aru-Island specimen described above.

3. *ALCYONE AFFINIS*. Allied Kingfisher.

Alcyone affinis, Gray, P. Z. S. 1860, p. 348.

A. torque pectorali nullo: abdomine rufo: rostro robustiore: supra lætissime ultramarina.

Hab. in insulis "Batchian" et "Gilolo" dictis.

Above brilliant ultramarine, brightest on the back; wing-coverts black washed with ultramarine; quills blackish, the inner web light rufous from the base, the outer web of the secondaries narrowly edged with ultramarine; a very small loral spot faint rufous; throat and a longitudinal patch of feathers along the sides of the neck whitish tinged with orange-rufous, paler on the chin; cheeks, ear-coverts, and a patch of feathers on the sides of the upper part of the breast brilliant ultramarine; under surface of the body rufous, with a rich lilac lustre on the flanks; feet red; bill brownish black, towards the tip whitish. Total length 6·7 inches, of bill from front 1·6, from gape 2·0, wing 3·85, tail 1·2, tarsus 0·3, middle toe 0·5, hind toe 0·25.

Hab. Batchian, Gilolo (*Wallace*).

From *Alcyone lessoni* this species differs in being slightly smaller,

and in having the back of a much more brilliant blue than in the New-Guinea bird. The description and measurements are from a bird kindly lent me by Mr. Wallace, and procured by him in Gilolo.

4. *ALCYONE DIEMENSIS*. Van Diemen's-Land Kingfisher.

Alcyone diemensis, Gould, P. Z. S. 1846, p. 19; *id.* Introd. Birds of Austr. p. 31 (1848); Gray, Gen. of Birds, i. p. 82 (c. 1844); Kaup, Fam. *Alced.* p. 18 (1848); Reich. Vög. Neuholl. p. 278 (1850); Cab. & Heine, Mus. Hein. Th. ii. p. 143 (1860); Gould, Handb. Birds of Austr. i. p. 141 (1865).

A. torque pectorali nullo: abdomine rufo: rostro tenuiore, brevior: pileo nigro indistincte fasciato.

Hab. in Tasmania.

Above deep blue, a little brighter on the rump, the head having the appearance of being indistinctly banded with dusky black; cheeks, ear-coverts, scapularies, and wing-coverts black washed with blue; wing-feathers blackish, the inner web light rufous from the base, the outer web distinctly washed with blue; tail blue above, black beneath; a small loreal spot, a patch of feathers along the sides of the neck and the throat white tinged with rufous; the whole of the under surface of the body deep rufous, with a very faint lilac lustre on the flanks; a large patch of feathers on the sides of the upper part of the breast black, with a slight blue shine; bill black; feet red. Total length 6 inches, of bill from front 1·4, from gape 1·9, wing 3·1, tail 1·35, tarsus 0·3, middle toe 0·55, hind toe 0·25.

Hab. Tasmania (*Gould*).

This species is rare in collections; and I have only met with one specimen, which I purchased of Verreaux. It is allied to *A. azurea*, but is much smaller and not nearly so brightly coloured, while on the back, as Mr. Gould justly observes, there is a slight greenish tinge in some lights. There are also some obscure black bands on the head. The description and measurements are taken from the specimen in my collection mentioned above.

5. *ALCYONE AZUREA*. Azure Kingfisher.

Alcedo azurea, Lath. Ind. Orn. Suppl. ii. p. xxxii (1801); Swains. Zool. Illustr. 1st ser. pl. 26 (1820); Schl. Mus. Pays-Bas, *Alced.* p. 17 (1863).

Ceyx azurea, Steph. Gen. Zool. xiii. p. 106 (1826); Jard. and Selb. Ill. Orn. ii. pl. 55. f. 1.

Alcyone azurea, Gray, Gen. of Birds, i. p. 82 (c. 1844); Gould, Birds of Austr. ii. pl. 25 (1848); *id.* Intr. to Birds of Austr. p. 31 (1848); Gray, Cat. Fiss. Brit. Mus. p. 65 (1848); Blyth, Cat. Birds Mus. As. Soc. Beng. p. 50 (1849); Bonap. Consp. Gen. Av. i. p. 158 (1850); Reich. Vög. Neuholl. p. 278 (1850); *id.* Handb. *Alced.* p. 7, t. 397. f. 3064, 3065 (1851); Cass. Cat. Halc. Phil. Mus. p. 5 (1852); Macgill. Voy. Rattl. ii. p. 356 (1852); Bonap. Consp. Vol. Anis. p. 10 (1854); Pelz. Voy. Novara Vög. p. 50 (1865); Gould, Handb. Birds of Austr. i. p. 139 (1865).

Alcedo tribrachys, Shaw and Nodd. Nat. Misc. pl. 281 (1804).

Ceyx tribrachys, Cuv. Règn. Anim. i. p. 417 (1817).

Ceyx cyanea, Less. Traité d'Orn. p. 241 (1831).

Alcedo australis, Swains. Classif. of Birds, ii. p. 336 (1837).

A. rostro tenuiore, longiore: pileo haud fasciato: hypochondriis rufis.

Hab. in Australia.

Above bright ultramarine; wing-coverts blackish, edged with ultramarine; quills blackish, the inner web light rufous at the base, the secondaries externally edged with faint blue; tail deep ultramarine above, black beneath; a loreal spot pale rufous; throat and a longitudinal patch of feathers along the sides of the neck white tinged with orange; cheeks, ear-coverts, and sides of the upper part of the breast bright ultramarine; rest of the under surface of the body rufous, with a lilac shine on the flanks and under tail-coverts; bill black; feet red. Total length 6·8 inches, of bill from front 1·8, from gape 2·25, wing 2·8, tail 1·1, tarsus 0·3, middle toe 0·5, hind toe 0·2.

Hab. Australia: New South Wales, and Southern Australia (*Gould*); Cape York (*Cockerell*); Queensland (*Mus. R. B. Sharpe*).

This species, which is the commonest of all the genus, is intermediate between *A. diemensis* and *A. pulchra*, which replace it in Tasmania and Northern Australia respectively. It is a beautiful species, yielding in this respect only to *A. pulchra*.

6. *ALCYONE PULCHRA*. Resplendent Kingfisher.

Alcyone pulchra, Gould, P. Z. S. 1846, p. 19; Gray, Gen. of Birds, i. p. 82 (c. 1844); Gould, Intr. to Birds of Austr. p. 31 (1848); Reich. Vög. Neuholl. p. 278 (1850); *id.* Handb. *Alced.* p. 7 (1851); Cass. Cat. Halc. Phil. Mus. p. 5 (1852); Elsey, P. Z. S. 1857, p. 25; Gould, Handb. Birds of Austr. i. p. 141 (1865).

A. torque pectorali nullo: abdomine rufo: rostro tenuiore, longiore: pileo haud fasciato: hypochondriis pulcherrime ultramarinis.

Hab. in Australia septentrionali.

Above very brilliant ultramarine, a little deeper on the wing-coverts; wing-coverts brownish black, edged with ultramarine; wing-feathers brownish, the inner web very light rufous at the base, the secondaries externally edged with ultramarine; tail deep blue above, black underneath; a small spot in front of the eye light rufous; throat and a patch of feathers along the sides of the neck white tinged with orange; cheeks and ear-coverts brilliant ultramarine; sides of the body also brilliant ultramarine, extending on to the flanks; rest of the under surface of the body deep rich rufous, with a lilac shine on the abdomen and under tail-coverts; bill deep black; feet orange. Total length 6·5 inches, of bill from front 1·95, from gape 2·2, wing 3·0, tail 1·3, tarsus 0·3, middle toe 0·5, hind toe 0·2.

Hab. Australia, Cape-York peninsula (*Mus. R. B. Sharpe*); Victoria River and Port Essington, N. W. Australia (*Gould, Elsey*).

Prince Bonaparte, following Mr. G. R. Gray, has united this species to the foregoing, in my opinion erroneously, and I can only believe that they have not seen a specimen. Mr. Gould and Mr. Cassin, both of whom have examined the type specimens (now in the Philadelphia Museum), have separated the two as distinct, and I entirely agree with their decision. I have in my collection two beautiful specimens of *A. pulchra*, and I certainly consider it one of the most clearly characterized of all the species of *Alcyone*. The brilliant hue of the whole plumage and the extension of the blue from the sides of the breast down on to the flanks distinguish it from any of the allied species. Both of my specimens have a slight blue edging to the feathers of the breast, one of them showing this peculiarity more than the other; in fact it almost forms a pectoral band in this specimen.

7. *ALCYONE PUSILLA*. Little Blue Kingfisher.

Ceyx pusilla, Temm. Pl. Col. 595 (1836); Müll. Verh. Ethn. p. 22 (1839); Gray, P. Z. S. 1858, p. 172.

Alcyone pusilla, Gould, Birds of Austr. ii. pl. 36 (1848); Reich. Handb. Alced. p. 7, t. 398. f. 3068, 3069 (1851); Cass. Cat. Halc. Phil. Mus. p. 5 (1852); Macgill. Voy. Rattl. ii. p. 356 (1852); Selater, Journ. Proc. Linn. Soc. 1858, p. 172; Rosenb. Journ. f. Orn. 1864, p. 118; Gould, Handb. Birds of Austr. i. p. 142 (1865); Ramsay, P. Z. S. 1868, p. 383.

Alcedo pusilla, Schl. Mus. Pays-Bas, Alced. p. 18 (1863); *id.* Vog. Ned. Ind. Alced. pp. 12, 48, pl. 3 (1864).

Nu-réa-bin-mo, of the natives of the Coburg peninsula (*Gould*).

A. torque pectorali nullo: abdomine albo.

Hab. in Australia septentrionali, in Nova Guinea, et insulis Moluccensibus.

Above rich ultramarine, having a greenish tinge in some lights on the head, cheeks, and wing-coverts; quills blackish, the inner web lighter at the base, the outer web distinctly washed with greenish blue, especially on the secondaries; tail blue above, black beneath; a loreal spot and a patch of feathers along the sides of the neck white, the latter slightly tinged with orange; entire under surface white, with a greenish gloss on the breast in some lights; shoulders, sides of the breast, and flanks rich ultramarine; bill and feet black; irides dark blackish brown. Total length 4·8 inches, of bill from front 1·15, from gape 1·4, wing 2·0, tail 0·85, tarsus 0·25, middle toe 0·45, hind toe 0·2.

Hab. Australia: N. Australia (*Gould*); Rockingham Bay (*Ramsay*); New Guinea (*Müller*); Aru Islands (*Wallace*); Gilolo (*Wallace*).

This little species, though everywhere rare, is widely distributed. My description and measurements are from a Gilolo specimen lent to me by Mr. Wallace.